

In the Claims:

Cancel claims 1 and 2 and enter the following new claims:

--3. A semiconductor component, comprising:

a semiconductor body having:

first and second main sides;

four doped regions with conductivities having alternating signs formed one above another between said first and second main sides;

a gate electrode disposed said first main side;

a source contact;

a drain contact;

one of said four doped regions being a weakly doped first base region with a given conductivity type;

another of said four doped regions being a second base region having a conductivity type with an opposite sign with respect to said given conductivity type, said second base region extending as far as said first main side and being connected

to said gate electrode, said second base region formed to control a channel formed in said second base region;

c) two remaining regions of said four doped regions being respectively connected to one of said source contact and said drain contact;

said source contact being connected to said second base region and being disposed on said first main side;

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cont. a buffer layer being doped to have said given conductivity type, said buffer layer being disposed between said first base region and one of said two remaining regions connected to said drain contact;

said first base region being dimensioned and a magnitude of a doping of said buffer layer being chosen such that, in an operating state in which the semiconductor component effects blocking in a direction from said source contact toward said drain contact, at least in an envisaged range of applied electrical voltages, a space charge zone present in said first base region is formed in a manner extending at least as far as said buffer layer; and

a further buffer layer being doped to have said given conductivity type and being disposed between said first base

c) region and said second base region, a magnitude of a doping of said further buffer layer being chosen such that the semiconductor component effects blocking in a direction from said drain contact toward said source contact in an envisaged range of opposite applied electrical voltages.

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cont 4. The component according to claim 3, wherein said magnitude of said doping of said further buffer layer is chosen such that, in an operating state in which the semiconductor component effects blocking in said direction from said drain contact toward said source contact, at least in an envisaged range of applied electrical voltages, a space charge zone present in said first base region is formed in a manner extending at least as far as said further buffer layer.

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C2 5. A semiconductor component, comprising:

a semiconductor body having:

first and second main sides;

a gate electrode disposed said first main side;

a source contact;

a drain contact disposed said second main side;

a first base region having a weak doping with a given conductivity type;

02 a second base region having a conductivity type opposite said given conductivity type and a channel, said second base region extending from said first main side into said semiconductor body, being connected to said gate electrode, and being formed to control said channel;

A7 cont. a third region having a conductivity type opposite said given conductivity type and being connected to said drain contact;

a fourth region having said given conductivity type and being connected to said second base region;

said source contact being disposed on said first main side and being connected to said fourth region and to said second base region;

a buffer layer being doped to have said given conductivity type, said buffer layer being disposed between said first base region and said third region;

a further buffer layer being doped to have said given conductivity type and being disposed between said first base region and said second base region;

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cont.
said first base region being dimensioned and a magnitude of a doping of said buffer layer being chosen such that, in an operating state in which the semiconductor component effects blocking in a direction from said source contact toward said drain contact, at least in an envisaged range of applied electrical voltages, a space charge zone present in said first base region is formed in a manner extending at least as far as said buffer layer; and

a magnitude of a doping of said further buffer layer being chosen such that the semiconductor component effects blocking in a direction from said drain contact toward said source contact in an envisaged range of opposite applied electrical voltages.

6. The component according to claim 5, wherein said magnitude of said doping of said further buffer layer is chosen such that, in an operating state in which the semiconductor component effects blocking in said direction from said drain contact toward said source contact, at least in an envisaged range of applied electrical voltages, a space charge zone

present in said first base region is formed in a manner extending at least as far as said further buffer layer.

7. A method for creating a power semiconductor switch, which comprises:

providing a semiconductor body having a first main side and a second main side;

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producing, in the semiconductor body, a weakly-doped first base region having a given conductivity type;

producing a buffer layer on the second main side of the first base region, and doping the buffer layer to have the given conductivity type

producing a third region on the buffer layer such that the buffer layer is disposed between the first base region and the third region, and doping the third region to have a conductivity type opposite the given conductivity type;

connecting a drain contact to the third region;

producing a further buffer layer on a first main side of the first base region and doping the further buffer layer to have the given conductivity type;

producing a second base region extending from the first main side into the semiconductor body to the further buffer layer such that the further buffer layer is disposed between the first base region and the second base region, and doping the second base region to have the conductivity type opposite the given conductivity type;

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cont. producing a fourth region at the second base region on the first main side, and doping the fourth region to have the given conductivity type;

connecting a gate electrode to the second base region on the first main side;

connecting a source contact to the fourth region and the second base region on the first main side;

controlling a channel in the second base region with the second base region;

dimensioning the first base region and choosing a magnitude of a doping of the buffer layer such that, in an operating state in which the semiconductor component effects blocking in a direction from the source contact toward the drain contact, at least in an envisaged range of applied electrical voltages, a

space charge zone present in the first base region is formed in a manner extending at least as far as the buffer layer; and

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cond.
choosing a magnitude of a doping of the further buffer layer such that the semiconductor component effects blocking in a direction from the drain contact toward the source contact in an envisaged range of opposite applied electrical voltages.

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~~a The method according to claim 5, which further comprises~~
choosing the magnitude of the doping of the further buffer layer such that, in an operating state in which the semiconductor component effects blocking in the direction from the drain contact toward the source contact, at least in an envisaged range of applied electrical voltages, a space charge zone present in the first base region is formed in a manner extending at least as far as the further buffer layer. -
